



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
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MAY 14 2007

REPLY TO THE ATTENTION OF:  
WW-16J

Marylou Poppa Renshaw, Chief,  
Watershed Planning Branch  
Office of Water Quality  
Indiana Department of Environmental Management  
100 North Senate Avenue  
Indianapolis, IN 46204-2251

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IDEH  
OFFICE OF  
WATER QUALITY

Dear Ms. Poppa Renshaw:

The United States Environmental Protection Agency (U.S. EPA) has reviewed the final Total Maximum Daily Loads (TMDLs) including supporting documentation and information for the Sugar Creek Watershed in Indiana. They include Sugar Creek (9 segments), Kirkhoff Ditch, Herriotts Creek - Upstream of Pisgah Lake, and Little Sugar Creek - Cutsinger Ditch. The Indiana Department of Environmental Management (IDEM's) TMDLs address the *E. coli* impairment of recreational use in the watershed. Based on this review, U.S. EPA has determined that Indiana's 12 TMDLs for *E. coli* meet requirement of Section 303(d) of the Clean Water Act and U.S. EPA's implementing regulations at 40 C.F.R. Part 130. Therefore, U.S. EPA approves 12 TMDLs for the Sugar Creek Watershed in Hancock, Henry, Johnson, Madison, and Shelby Counties, Indiana. The statutory and regulatory requirements, and U.S. EPA's review of Indiana's compliance with each requirement, are described in the enclosed decision document.

We appreciate your hard work in this area and the submittal of the TMDL as required. If you have any questions, please contact Mr. Kevin Pierard, Chief of the Watersheds and Wetlands Branch at 312-886-4448.

Sincerely yours,

Jo Lynn Traub  
Director, Water Division

Enclosure

cc: Andrew Pelloso, IDEM  
Staci Goodwin, IDEM  
Selena Medrano, IDEM



## DECISION DOCUMENT FOR SUGAR CREEK WATERSHED, INDIANA, E. COLI TMDL

Section 303(d) of the Clean Water Act (CWA) and U.S. EPA's implementing regulations at 40 C.F.R. Part 130 describe the statutory and regulatory requirements for approvable TMDLs. Additional information is generally necessary for U.S. EPA to determine if a submitted TMDL fulfills the legal requirements for approval under Section 303(d) and U.S. EPA regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation. Use of the term "should" below denotes information that is generally necessary for U.S. EPA to determine if a submitted TMDL is approvable. These TMDL review guidelines are not themselves regulations. They are an attempt to summarize and provide guidance regarding currently effective statutory and regulatory requirements relating to TMDLs. Any differences between these guidelines and U.S. EPA's TMDL regulations should be resolved in favor of the regulations themselves

### 1. Identification of Waterbody, Pollutant of Concern, Pollutant Sources, and Priority Ranking

The TMDL submittal should identify the waterbody as it appears on the State's/Tribe's 303(d) list. The waterbody should be identified/georeferenced using the National Hydrography Dataset (NHD), and the TMDL should clearly identify the pollutant for which the TMDL is being established. In addition, the TMDL should identify the priority ranking of the waterbody and specify the link between the pollutant of concern and the water quality standard (see section 2, below).

The TMDL submittal should include an identification of the point and nonpoint sources of the pollutant of concern, including location of the source(s) and the quantity of the loading, e.g., lbs/per day. The TMDL should provide the identification numbers of the NPDES permits within the waterbody. Where it is possible to separate natural background from nonpoint sources, the TMDL should include a description of the natural background. This information is necessary for U.S. EPA's review of the load and wasteload allocations, which are required by regulation.

The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as:

- (1) the spatial extent of the watershed in which the impaired waterbody is located;
- (2) the assumed distribution of land use in the watershed (e.g., urban, forested, agriculture);
- (3) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources;
- (4) present and future growth trends, if taken into consideration in preparing the TMDL (e.g., the TMDL could include the design capacity of a wastewater

treatment facility); and  
(5) an explanation and analytical basis for expressing the TMDL through *surrogate measures*, if applicable. *Surrogate measures* are parameters such as percent fines and turbidity for sediment impairments; chlorophyll *a* and phosphorus loadings for excess algae; length of riparian buffer; or number of acres of best management practices.

*Comment:*

This TMDL will address approximately 69.5 miles of the Sugar Creek Watershed located in Hancock, Henry, Johnson, Madison, and Shelby Counties, Indiana. Segments of the Sugar Creek Watershed are listed on Indiana's 303(d) list for impairment of recreational use due to elevated *E. coli* levels during the recreational season. The *E. coli* impaired segments of the Sugar Creek Watershed include multiple segments of Sugar Creek, Kirkhoff Ditch Little Sugar Creek, and Herriotts Creek. The table on Page 2 of the TMDL identifies the waterbody as it appears on Indiana's 303(d) list and the State's segment identification number.

The Sugar Creek Watershed ranges over five counties. The headwaters of Sugar Creek originate in western Henry County, the southeastern portion of Madison County, and northeast Hancock County, Indiana and flows west through Hancock County. The Creek then turns south to flow southwest through Shelby and Johnson Counties. Little Sugar – Cutsinger Ditch flows southeast through the eastern portion of Johnson County to meet with Sugar Creek just after it enters Johnson County. Herriotts Creek, upstream of Pisgah Lake, flows to the southeast to join Sugar Creek in southern Johnson County.

Land use information was assembled in 1992 for the watershed. According to the 1992 data, approximately 89.2% of the land use in the watershed was agriculture; with the remaining land use divided as follows; approximately 6% was forest, 3.33% wetlands, 1.11% urban and 0.3% water. Figure 3 of the TMDL identifies the land uses.

There are point and nonpoint sources of *E. coli*, the pollutant of concern, in the Sugar Creek Watershed. There are nine NPDES permitted discharges in the watershed. Table 1 and figure 5 of the TMDL identify each discharger and the corresponding permit number and location. Three of the nine dischargers have limits for *E. coli* in their permits. The State determined that all three of these facilities are in compliance with the *E. coli* limits in their respective permits and are not causing impairment of *E. coli* to the respective streams. The permit limits are set at the geometric mean of 125/100ml for *E. coli* and a single sample maximum of 235/100ml. Three of the dischargers each have a possible sanitary component to their discharge. However, they do not have *E. coli* limits because Indiana initially assumed that the chlorine in their systems would deactivate the *E. coli* bacteria and as such would not contribute to an exceedance of the recreational use water quality standard. Since the issuance of the permits, Indiana determined that there is no conclusive, direct correlation between total residual chlorine levels and *E. coli* bacteria, and therefore, considers the three dischargers sources of *E. coli*. The remaining

three dischargers do not have a sanitary component to their discharge; therefore they are not considered a source of *E. coli* by IDEM.

There are five municipal separate storm water sewer system (MS4) communities in the Sugar Creek watershed. The MS4 communities are Hancock County, Johnson County, Madison County, New Palestine, and Edinburgh. These storm sewer systems are regulated by Indiana's Storm Water General Permit Rule 13.

There are no Combined Sewer Overflow (CSO) communities in the Sugar Creek Watershed.

There are no confined animal feeding operations (CAFOs) in the watershed. However there are six confined feeding operations (CFOs); Table 2 of the TMDL identifies these CFOs. Indiana's CFO regulations, 327 Indiana Administrative Code 16, require that these operations "not cause or contribute to an impairment of surface waters of the state." Since there were no enforcement actions on the date the TMDL was sent to U.S. EPA, these CFOs are not considered a significant source of *E. coli*. Indiana does believe that there are a number of small, unregulated, livestock operations in the watershed that may significantly contribute to *E. coli* levels in the watershed.

Indiana has determined that wildlife is a nonpoint source of *E. coli* contributing to the impairment of the Sugar Creek Watershed's recreational use water quality standard. Many animals spend time in or around waterbodies. Deer, geese, ducks, raccoons, turkey, and other animals are all potential sources of *E. coli*.

The State determined that another source of nonpoint contribution is failing septic tanks. Portions of all five counties have homes on septic systems. Indiana does not have an accurate count of the number of homes using septic systems in the watershed. Henry County has had a septic system permitting system in place since the 1970's. No tangible septic failure rate has been established by any of the local Health Departments at this time.

During the listing process, the State gives each TMDL a priority ranking and scheduling. The TMDL development schedule corresponds with IDEM's basin-rotation water quality monitoring schedule to take advantage of all available resources for TMDL development. Prioritization is based on whether the designated uses are being met, the magnitude of the impairment, and other plans for the watershed.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this first element.

## **2. Description of the Applicable Water Quality Standards and Numeric Water Quality Target**

The TMDL submittal must include a description of the applicable State/Tribal water quality standard, including the designated use(s) of the waterbody, the applicable

numeric or narrative water quality criterion, and the antidegradation policy. (40 C.F.R. §130.7(c)(1)). U.S. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

The TMDL submittal must identify a numeric water quality target(s) – a quantitative value used to measure whether or not the applicable water quality standard is attained. Generally, the pollutant of concern and the numeric water quality target are, respectively, the chemical causing the impairment and the numeric criteria for that chemical (e.g., chromium) contained in the water quality standard. The TMDL expresses the relationship between any necessary reduction of the pollutant of concern and the attainment of the numeric water quality target. Occasionally, the pollutant of concern is different from the pollutant that is the subject of the numeric water quality target (e.g., when the pollutant of concern is phosphorus and the numeric water quality target is expressed as Dissolved Oxygen (DO) criteria). In such cases, the TMDL submittal should explain the linkage between the pollutant of concern and the chosen numeric water quality target.

*Comment:*

*Use Designation:* The impaired designated use addressed in this TMDL is for total body contact recreational use during the recreational season found at 327 IAC 2-1-6(d). The recreational season is from April 1<sup>st</sup> through October 31<sup>st</sup>. 327 IAC 2-1-6(d) establishes the total body contact recreational use *E. coli* WQS for all waters in the non-Great Lakes system as follows:

*E. coli* bacteria, using membrane filter (MF) count, shall not exceed on hundred twenty-five (125) per hundred (100) milliliters as a geometric mean based on not less than five (5) samples equally spaced over a thirty (30) day period nor exceed two hundred thirty-five (235) per one hundred (100) milliliters in any one (1) sample in a thirty (30) day period.

The sanitary wastewater *E. coli* effluent limits from point sources in the non-Great Lakes system during the recreational season are also covered under 327 IAC 2-1-6(d).

For the Sugar Creek Watershed, during the recreation season the target level is set at the *E. coli* WQS of 125 per 100 milliliters (ml) as a 30-day geometric mean based on not less than five samples equally spaced over a thirty day period. As stated above, the *E. coli* WQS has a geometric mean and a single sample maximum. The TMDL explains "[t]he geometric mean for *E. coli* WQS allows for the best characterization of the watershed. U.S. EPA agrees with this approach, since it is consistent with U.S. EPA's rule 40 CFR 131, *Water Quality Standards for Coastal and Great Lakes Recreation Waters*. In this document, U.S. EPA explains that "the geometric mean is a more relevant value for ensuring that appropriate actions are taken to protect and improve water quality because it is a more reliable measure, being less subject to random variation . . .".

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this second element.

### 3. Loading Capacity - Linking Water Quality and Pollutant Sources

A TMDL must identify the loading capacity of a waterbody for the applicable pollutant. U.S. EPA regulations define loading capacity as the greatest amount of a pollutant that a water can receive without violating water quality standards (40 C.F.R. §130.2(f)).

The pollutant loadings may be expressed as either mass-per-time, toxicity or other appropriate measure (40 C.F.R. §130.2(i)). If the TMDL is expressed in terms other than a daily load, e.g., an annual load, the submittal should explain why it is appropriate to express the TMDL in the unit of measurement chosen. The TMDL submittal should describe the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In many instances, this method will be a water quality model.

The TMDL submittal should contain documentation supporting the TMDL analysis, including the basis for any assumptions; a discussion of strengths and weaknesses in the analytical process; and results from any water quality modeling. U.S. EPA needs this information to review the loading capacity determination, and load and wasteload allocations, which are required by regulation.

TMDLs must take into account *critical conditions* for stream flow, loading, and water quality parameters as part of the analysis of loading capacity. (40 C.F.R. §130.7(c)(1)). TMDLs should define applicable *critical conditions* and describe their approach to estimating both point and nonpoint source loadings under such *critical conditions*. In particular, the TMDL should discuss the approach used to compute and allocate nonpoint source loadings, e.g., meteorological conditions and land use distribution.

#### *Comment:*

The load capacity for the segments in the watershed IDEM has determined to be equal to the Water Quality Standard: *E. coli* may not exceed the geometric mean of 125 cfu/100 ml and the single sample maximum of 235 cfu/100 ml, from April 1<sup>st</sup> through October 31<sup>st</sup>. IDEM did consider impacts from wildlife as a source.

IDEM used the linkage between the *E. coli* concentration in the Sugar Creek Watershed and the potential sources to provide the basis for the development of the TMDL. There is a cause and effect relationship between the selected indicator and sources. The State's analysis of the data for the Sugar Creek Watershed indicates that a significant amount of *E. coli* load enters the watershed through both wet (nonpoint sources) and dry (point sources) weather.

IDEM used a load duration curve approach in developing this TMDL. An explanation of the approach is found in the *Linkage Analysis and E. coli Load Duration Curves* section of the TMDL (Pages 6-9 of the TMDL). In summary, continuous flow data is required, and was provided by U.S. Geological Survey (USGS) gage 03361650 located in New Palestine, Indiana for sample sites 1-10 and USGS gage 03362500 near Edinburgh, Indian in Johnson County sample sites 11-15. Both of these gages are located on Sugar Creek.

The State concluded that *E. coli* sources to Sugar Creek Watershed arise from a mixture of dry and wet weather conditions, and that there is no single critical condition that would achieve the *E. coli* WQS. The load duration curve represents pollutants during both dry and wet weather events. Both of these conditions are critical for the conceptual model in describing how the pollutants behave in a natural environment and were considered when developing the curve. The TMDL, however, is not load based but concentration based and the load allocation is equal to *E. coli* WQS for each 30 days of the recreational season (April 1- October 31).

IDEM's pathogen TMDL approach is based upon the premise that all discharges (point and non-point) must meet the *E. coli* WQS when entering the waterbody. If all sources are meeting the WQS at discharge, then the waterbody will by definition meet the WQS and the designated use. IDEM has charted under what flow conditions the water quality exceedances occur. Exceedances that occur during low flow conditions include those from septic systems and exceedances that occur during higher flow events include run-off. IDEM has reviewed these load duration curves, and believes that *E. coli* sources are attributed to both wet-weather (nonpoint) and dry weather (point) events. EPA agrees with this review. Using the load duration curve approach allows IDEM to determine which implementation practices are most effective for reducing *E. coli* loads based on flow regime. For example, if loads are significant during storm events, implementation efforts can target those best management plans that will most effectively reduce storm water run-off. This allows for a more efficient implementation effort.

The load duration curve is a cost-effective TMDL implementation approach, while still addressing the reductions necessary to meet WQS for *E. coli* bacteria. The approach also aids in sharing the responsibility for *E. coli* reduction among various municipalities in the TMDL watershed, which encourages collective implementation efforts. IDEM has incorporated recent data (2002). The data was collected at different times during the recreational period of 2002 for different sites. This data was collected for the TMDL and other purposes. All sites were sampled five times equally spaced over a 30 day period. Of the fifteen sites, ten violated the geometric mean for *E. coli*. Of the five sites that did not violate the geometric mean, one site violated the single sample maximum for *E. coli*.

Weaknesses of the TMDL analysis are that nonpoint source load allocations were not assigned to specific sources within the watershed, and the identified sources of *E. coli* were assumed based on the data collected in the watershed, rather than determined by detailed monitoring and sampling efforts. Moreover, specific reductions were not quantified. However, EPA believes the weaknesses discussed in this TMDL are



outweighed by the strengths of the TMDL approach, discussed above, and is appropriate based upon the information available.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this third element.

#### 4. Load Allocations (LAs)

U.S. EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity attributed to existing and future nonpoint sources and to natural background. Load allocations may range from reasonably accurate estimates to gross allotments (40 C.F.R. §130.2(g)). Where possible, load allocations should be described separately for natural background and nonpoint sources.

##### *Comment:*

The Load Allocation Section of the TMDL submitted and related materials states that the load allocations for the segments in the watershed is equal to the Water Quality Standard: *E. coli* may not exceed the geometric mean of 125 cfu/100 ml and the single sample maximum of 235 cfu/100 ml, from April 1<sup>st</sup> through October 31<sup>st</sup>. IDEM did consider impacts from wildlife as a source.

IDEM calculated the geometric means and reductions needed for each sampling site in the watershed (Attachment A of the TMDL). As previously discussed, IDEM developed load duration curves (LDCs) for each sampling site in the Sugar Creek watershed. However IDEM determined that sampling sites 1, 9, 11 and 14 provide the best description of the sources of *E. coli* to the Sugar Creek Watershed. These LDCs can be used to determine a daily mass loading, if needed. The daily mass loading will vary depending on stream flow. These curves will be used by IDEM to target the critical flow regimes implementation, and to determine the reduction needed for each sampling site in the watershed (Attachment C of the TMDL). Thus, rather than determine reductions based upon land use types or source categories, the reductions are based upon geographic location.

CFO's could be a source of *E. coli* during high flow conditions on the water quality duration curve. These facilities (Table 2 of the TMDL identifies the facilities) have the potential to cause a violation of the *E. coli* water quality standard through land application or a malfunction at the facility. There are no open enforcement cases against any of the facilities; therefore, these facilities are not considered major sources of *E. coli* nor considered to cause violations and are considered to meet the target standard.

Failing septic systems are a known source of *E. coli* based on information provided to IDEM. Failing septic systems would provide a constant source of *E. coli* particularly during low to mid-range flow conditions. Septic systems can also fail during higher flow conditions. These septic systems will need to have reductions made to meet the standard.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this fourth element.

## 5. Wasteload Allocations (WLAs)

U.S. EPA regulations require that a TMDL include WLAs which identify the portion of the loading capacity allocated to individual existing and future point source(s) (40 C.F.R. §130.2(h), 40 C.F.R. §130.2(i)). In some cases, WLAs may cover more than one discharger, e.g., if the source is contained within a general permit.

The individual WLAs may take the form of uniform percentage reductions or individual mass based limitations for dischargers where it can be shown that this solution meets WQSs and does not result in localized impairments. These individual WLAs may be adjusted during the NPDES permitting process. If the WLAs are adjusted, the individual effluent limits for each permit issued to a discharger on the impaired water must be consistent with the assumptions and requirements of the adjusted WLAs in the TMDL. If the WLAs are not adjusted, effluent limits contained in the permit must be consistent with the individual WLAs specified in the TMDL. If a draft permit provides for a higher load for a discharger than the corresponding individual WLA in the TMDL, the State/Tribe must demonstrate that the total WLA in the TMDL will be achieved through reductions in the remaining individual WLAs and that localized impairments will not result. All permittees should be notified of any deviations from the initial individual WLAs contained in the TMDL. U.S. EPA does not require the establishment of a new TMDL to reflect these revised allocations as long as the total WLA, as expressed in the TMDL, remains the same or decreases, and there is no reallocation between the total WLA and the total LA.

### *Comment:*

There are nine NPDES permitted point source facilities identified in the TMDL document for Sugar Creek Watershed (Table 1 of the TMDL and below). Three of these have *E. coli* limits in their permits. Three have total residual chlorine (TRC) limits and three have no sanitary component.

Table 1 NPDES permits in Sugar Creek Watershed

Permit No	Facility Name	Receiving Water	Limit Type current
IN0025437	Act II Estates	Eastes Ditch to Sugar Creek	<i>E. coli</i>
IN0057959	Arrow Head Mobile Home Park	Sugar Creek	<i>E.coli</i>
IN0049689	Eden Elementary School	Barret Ditch to Sugar Creek	<i>E. coli</i>
IN0036528	Sugar Creek Utility Company	Sugar Creek	TRC
IN0038431	Creekside Mobile Home Park	Sugar Creek	TRC
IN0042358	New Palestine Municipal STP	Sugar Creek	TRC
IN0059307	Franklin Plant - IAWC	Sugar Creek	No limit
IN0003409	Sonoco Flexible Packaging	Sugar Creek	No limit

IN0060747	Shelby Petroleum, Inc	Potts Ditch	No limit
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For the point source facilities with *E. coli* limits, the limits are set at the standard for *E. coli* (both the geometric mean of 125/100 ml and single sample maximum 235/100 ml) to meet the designated recreational use. For the three permitted point sources with total residual chlorine limits, IDEM recommends that they have *E. coli* limits based on the standard in 327 IAC 2-1-6(d) placed in each of their permits in the next listing cycle.

There are five municipal stormwater communities. The table below identifies the communities and corresponding Municipal Separate Storm Sewer System (MS4) permits. MS4 permits and timelines are outlined in Indiana's Municipal Separate Storm Sewer System Rule 13 (327 IAC 15-13-10 and 327 IAC 15-13-11).

Permittee	Permit Number
Hancock County	INR040128
Johnson County	INR040045
Madison County	INR04111
New Palestine	INR040070
Edinburgh	INR040026

The WLA is set at the WQS of 125 /100ml as a geometric mean based on not less than five samples equally spaced over a thirty-day period from April 1 through October 31. The WLA for straight pipe discharges is set to zero.

As mentioned earlier there are no CAFO's in the watershed.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning the fifth element.

#### 6. Margin of Safety (MOS)

The statute and regulations require that a TMDL include a margin of safety (MOS) to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)). U.S. EPA's 1991 TMDL Guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.

#### *Comment:*

This TMDL contains an implicit margin of safety because no rate of decay was used. Since pathogenic organisms have a more limited capability of surviving outside their hosts, a rate of decay would normally be used. It was determined by the State, however,

that it is more conservative to use the water quality standard of 125/100 ml, and not to apply a rate of decay which could result in a discharge limit greater than the water quality standard. Also, the water quality standard of 125/100 ml must be met under all flow conditions. The above assumptions meet the requirement of an implicit margin of safety.

EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this sixth element.

## **7. Seasonal Variation**

The statute and regulations require that a TMDL be established with consideration of seasonal variations. The TMDL must describe the method chosen for including seasonal variations. (CWA §303(d)(1)(C), 40 C.F.R. §130.7(c)(1)).

### *Comment:*

The Seasonality Section of the TMDL addresses seasonality by using WQS for total body contact during the recreational season (April 1<sup>st</sup> through October 31<sup>st</sup>) defined previously. Any high or low flows are addressed within the TMDL because this is a concentration-based TMDL, and IDEM has analyzed impacts based upon the LDC method, which accounts for seasonal variations in flows and thus in loads. Therefore all standards will be met regardless of the season of flow events.

EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this seventh element.

## **8. Reasonable Assurances**

When a TMDL is developed for waters impaired by point sources only, the issuance of a National Pollutant Discharge Elimination System (NPDES) permit(s) provides the reasonable assurance that the wasteload allocations contained in the TMDL will be achieved. This is because 40 C.F.R. §122.44(d)(1)(vii)(B) requires that effluent limits in permits be consistent with "the assumptions and requirements of any available wasteload allocation" in an approved TMDL.

When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, U.S. EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for U.S. EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards.

U.S. EPA's August 1997 TMDL Guidance also directs Regions to work with States to achieve TMDL load allocations in waters impaired only by nonpoint sources. However, U.S. EPA cannot disapprove a TMDL for nonpoint source-only impaired

waters, which does not have a demonstration of reasonable assurance that LAs will be achieved, because such a showing is not required by current regulations.

*Comment:*

IDEM has some programs in place and are working on other programs to assist in meeting the Sugar Creek Watershed TMDL allocation and the *E. coli* WQS. The following are some of the programs used to implement the TMDL:

- NPDES - IDEM recommends the incorporation of *E. coli* permit limits based on the recreational use water quality standard into the permits of the three discharges that do not currently have *E. coli* limits in their permits. For those dischargers who do have *E. coli* limits based on the recreational use water quality standard in their current permits, the limits will be maintained in the permit.
- Stormwater permits (MS4) - The State issued MS4 permits to the five MS4 communities in the Sugar Creek Watershed. Once these permits are implemented, they will improve the water quality in the Sugar Creek Watershed. Indiana will use these permits to address the stormwater impacts in the Sugar Creek Watershed.
- CFO – there are six CFO's and zero CAFO's in the watershed. The CFOs are required to manage manure, litter, and process wastewater pollutants in a manner that does not cause or contribute to the *E. coli* impairment of the watershed.
- There are several watershed projects taking place in the Sugar Creek Watershed. These projects are discussed under the Reasonable Assurance Activities in the TMDL submittal.
- Potential future actions Best Management Practices (BMPs) - IDEM is looking at several types of BMPs to help in the control of nonpoint source pollution. These types of BMPs may include: Riparian area management; manure collection and storage; contour row crops farming practice; drift fences; and septic management/public education.

EPA finds that the TMDL document submitted by the IDEM adequately addresses this eighth element.

## **9. Monitoring Plan to Track TMDL Effectiveness**

U.S. EPA's 1991 document, *Guidance for Water Quality-Based Decisions: The TMDL Process* (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that

describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of water quality standards.

*Comment:*

The Monitoring section of the TMDL submittal states that monitoring will occur on the 5-year rotating basin schedule and/or once TMDL implementation methods are in place. When the results indicate that the waterbody is meeting the *E. coli* WQS, IDEM will monitor at an appropriate frequency to determine if Indiana's 30 day geometric mean value of 125/100 ml *E. coli* is being met.

EPA finds that the TMDL document submitted by the IDEM adequately addresses this ninth element.

## **10. Implementation**

U.S. EPA policy encourages Regions to work in partnership with States/Tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired by nonpoint sources. Regions may assist States/Tribes in developing implementation plans that include reasonable assurances that nonpoint source LAs established in TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. In addition, U.S. EPA policy recognizes that other relevant watershed management processes may be used in the TMDL process. U.S. EPA is not required to and does not approve TMDL implementation plans

*Comment:*

This TMDL does not contain a formal implementation plan. An implementation plan is not required under the U.S. EPA regulations. However IDEM did include several suggestions for potential future activities, see pages 13 and 14 of TMDL.

EPA finds that the TMDL document submitted by the IDEM adequately addresses this tenth element.

## **11. Public Participation**

U.S. EPA policy is that there should be full and meaningful public participation in the TMDL development process. The TMDL regulations require that each State/Tribe must subject calculations to establish TMDLs to public review consistent with its own continuing planning process (40 C.F.R. §130.7(c)(1)(ii)). In guidance, U.S. EPA has explained that final TMDLs submitted to U.S. EPA for review and approval should describe the State's/Tribe's public participation process, including a summary of significant comments and the State's/Tribe's responses to those comments. When U.S. EPA establishes a TMDL, U.S. EPA regulations require U.S. EPA to publish a notice seeking public comment (40 C.F.R. §130.7(d)(2)).

Provision of inadequate public participation may be a basis for disapproving a TMDL. If U.S. EPA determines that a State/Tribe has not provided adequate public participation, U.S. EPA may defer its approval action until adequate public participation has been provided for, either by the State/Tribe or by U.S. EPA.

*Comment:*

The TMDL was public noticed from July 18, 2006 to August 21, 2006. A stakeholder meeting took place on July 18, 2006, at the Hancock County Purdue Extension Office, located at 802 North Apple Street, Greenfield, Indiana. The stakeholder meeting was held to provide an overview of the draft TMDL and an opportunity for public comments. The presentation for the public meeting was included in the final TMDL submittal. Copies of the draft TMDL were posted on the IDEM's Web site at: <http://www.in.gov/idem/water/planbr/wqs/tmdl/documents.html>. U.S. EPA sent in comments to the draft TMDL and they were adequately addressed in the final TMDL. IDEM received six public comments on the TMDL. IDEM adequately addressed the comment.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this eleventh element.

## **12. Submittal Letter**

A submittal letter should be included with the TMDL submittal, and should specify whether the TMDL is being submitted for a *technical review* or *final review and approval*. Each final TMDL submitted to U.S. EPA should be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under Section 303(d) of the Clean Water Act for U.S. EPA review and approval. This clearly establishes the State's/Tribe's intent to submit, and U.S. EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final review and approval, should contain such identifying information as the name and location of the waterbody, and the pollutant(s) of concern.

*Comment:*

U.S. EPA received the Sugar Creek Watershed TMDL on April 23, 2007, accompanied by a submittal letter dated April 16, 2007. In the submittal letter, IDEM stated the attached TMDL is "the Final TMDL submission from the State of Indiana for the Sugar Creek Watershed Segment IDs INW0461\_T1029, INW0463\_T1030, INW0464\_T1003, INW0464\_T1031, INW0465\_T1032, INW0481\_T1034, INW0485\_T1035, INW0488\_00, INW0489\_T1036, INW048A\_T1037, INW0498\_00, and INW0498\_T1038. This TMDL is being submitted per the requirements under Section 303(d) of the Clean Water Act and 40 CFR 130. The Sugar Creek Watershed TMDL addresses the impairment of *E. coli*". Twelve segments are listed in the submittal letter.

U.S. EPA finds that the TMDL document submitted by IDEM satisfies all requirements concerning this twelfth element.

### 13. Conclusion:

After a full and complete review, U.S. EPA finds that the IDEM submittal determines standard-based concentrations for a total of 12 TMDLs for Sugar Creek Watershed in Hancock, Henry, Johnson, Madison, and Shelby Counties, Indiana. The allocations satisfy all of the elements of an approvable TMDL. This approval is for the waterbody segments and impairments set forth in the table below. Impairments addressed in these TMDLs are *E.coli*. from the pollutant *E.coli*.

U.S. EPA's approval of this TMDL extends to the waterbodies which are identified in this document and the TMDL with the exception of any portions of the waterbody that are within Indian Country, as defined in 18 U.S.C. Section 1151. EPA is taking no action to approve or disapprove the State's TMDL with respect to those portions of the water at this time. EPA, or eligible Indian Tribes, as appropriate, will retain responsibilities under Section 303(d) for those waters.

Waterbody Name	303(d) list ID	Segment numbers	length (miles)	Impairment	Pollutant
Sugar Creek- Downstream Grain Creek	29	INW0461_T1029	3.64	E. coli	E. coli
Sugar Creek - Barrett Ditch	29	INW0463_T1030	10.03	E. coli	E. coli
Kirkhoff Ditch	29	INW0464_T1003	1.58	E. coli	E. coli
Sugar Creek - Boyd Ditch	29	INW0464_T1031	6.93	E. coli	E. coli
Sugar Creek Smith - Johnson Ditch	29	INW0465_T1032	8.8	E. coli	E. coli
Sugar Creek - Broad Ripple Camp	29	INW0481_T1034	4.09	E. coli	E. coli
Sugar Creek - Needham	29	INW0485_T1035	6.21	E. coli	E. coli
Little Sugar Creek - Cutsinger Ditch	29	INW0488_00	8.3	E. coli	E. coli
Sugar Creek - Gibson Ditch	29	INW0489_T1036	2.03	E. coli	E. coli



Sugar Creek - McCue Medsker Ditch	29	INW048A_T1037	10.12	E. coli	E. coli
Herriotts Creek - Upstream of Pisgah Lake	29	INW0498_00	2.61	E. coli	E. coli
Sugar Creek - Herriotts Creek	29	INW0498_T1038	5.12	E. coli	E. coli

